

New Exotic Crane-Flies (Tipulidae: Diptera). Part IV

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The preceding part under this general title was published in ENTOMOLOGICAL NEWS, 72: 113-121; 1961. At this time I am considering species of the genus *Hexatoma*, chiefly from various parts of India where they were taken by Dr. Fernand Schmid, and including two from the Philippines, where they were taken by Mr. Charles F. Clagg and Dr. Edward S. Ross. Except where indicated to the contrary, the types of the novelties are preserved in my personal collection of these flies.

Hexatoma (Eriocera) prolixa new species

Belongs to the *longicornis* group; size medium (wing under 10 mm); antennae of male elongate, approximately twice the length of the wing; general coloration gray, praescutum with three darker stripes; wings with R_{1+2} slightly longer than either R_2 or R_{2+3} .

- ♂. Length about 6-6.5 mm; wing 7.5-8 mm; antenna about 12-16 mm.
♀. Length about 7-8 mm; wing 7.5-9 mm; antenna about 1.3-1.5 mm.

Rostrum short, light brown, sparsely pruinose; palpi with proximal segments brown, terminal segment black. Antennae of male 6-segmented, elongate, approximately twice the length of the wing, dark brown; flagellar segments greatly lengthened, especially the terminal one; segments with a dense erect white pubescence, with very sparse larger emergence bristles that are very small on the basal segment, becoming longer and more delicate on the terminal one; antennae of female short, apparently 9-segmented, the segments gradually decreasing in length outwardly. Head gray, clearer laterally behind; vertical tubercle

¹ Contribution from the Entomological Laboratory, University of Massachusetts.

of male large, rounded, with an impressed line on either side; tubercle in female very reduced.

Pronotum dark brown. Mesonotum gray, praescutum with three brown stripes, the median one narrowed behind, in front vaguely divided by a darker capillary vitta; vestiture sparse, pale. Halteres with stem brownish yellow, knob dark brown. Legs with coxae dark brown; trochanters more yellowed, especially beneath; remainder of legs brownish black, femoral bases obscure yellow, more extensively so on the posterior legs. Wings weakly darkened; stigma oval, very slightly indicated; veins brown, the outer medial branches paler. Veins chiefly glabrous, beyond cord with abundant trichia on R , R_1 , R_3 , R_4 and a complete series on distal section of R_5 ; a few trichia on distal section of M_{1+2} in some cases; basal veins glabrous, including Sc . Venation: Sc long, Sc_1 ending opposite fork of R_s to shortly before level of $r-m$; R_2 subequal to R_{2+3} , both shorter than R_{1+2} ; $m-cu$ shortly beyond fork of M .

Abdomen chiefly blackened, sparsely pruinose to appear plumbeous. Ovipositor with fleshy valves, as in the group.

Habitat. INDIA (Kumaon). *Holotype*: ♂, Koti, Pauri Garhwal, 4,200 feet, August 30, 1958 (Fernand Schmid). *Allotopotype*: ♀, pinned with type. *Paratypes*: 1 ♂, Lingari, Pauri Garhwal, 4,400 feet, September 1, 1958; 1 ♀, Lohajang, Pauri Garhwal, 6,070 feet, August 21, 1958; 3 ♂♀, Maupata, Pauri Garhwal, 4,500 feet, September 2, 1958; 1 ♂, Wan, Pauri Garhwal, 7,880 feet, August 20, 1958; 1 ♂, Bilap, Almora, 5,500 feet, September 6, 1958 (Fernand Schmid).

Hexatoma (Eriocera) prolixa is distinguished from other regional members of the *longicornis* group by its small size and comparative shortness of the male antennae, which are only about twice the wing length.

Hexatoma (Eriocera) serena new species

Size medium (wing of female 10 mm); general coloration black, surface subnitidous; legs black, femoral bases broadly yellow; wings strongly darkened, base conspicuously light yel-

low; veins with abundant macrotrichia; R_{2+3+4} and R_{1+2} subequal, R_2 and R_{2+3} short, nearly equal, $m-cu$ at or beyond midlength of M_{3+4} ; abdomen black, genital segment orange, ovipositor with cerci very long and slender.

♀. Length about 12 mm; wing 10 mm; antenna about 1.2 mm.

Rostrum and palpi black. Antennae of female short, 7-segmented; first segment of flagellum enlarged at base, narrowed outwardly, with a few long setae, the longest exceeding one-half the length of segment; succeeding three segments progressively shorter, terminal segment long, more than twice the length of the penultimate. Head black.

Thorax uniformly black, surface subnitidous; praescutal and scutal setae long, black. Halteres blackish, base of stem orange. Legs with coxae black, trochanters brown, remainder of legs black, the femoral bases broadly yellow, slightly more extensively so on posterior legs where nearly the proximal half is included. Wings strongly darkened, especially along the veins, centers of the cells slightly paler; prearcular field conspicuously light yellow, proximal ends of cells C and Sc less evidently brightened; veins brown, paler in the yellow areas. Veins of outer two-thirds of wing with abundant macrotrichia, including also all of veins Sc , R and M and outer half of Cu_1 and $1st A$; a few trichia at extreme outer end of vein $2nd A$. Venation: Sc_1 nearly opposite fork of the long Rs ; R_{2+3+4} and R_{1+2} subequal or the former a trifle longer; R_2 and R_{2+3} short, nearly equal; basal section of R_5 about one-half R_{2+3+4} ; cell $1st M_2$ a little shorter than M_4 ; $m-cu$ at or just beyond midlength of M_{3+4} ; distal section of Cu_1 in longitudinal alignment with the basal section. Surface of wing of type showing loose hairs lying on but detached from the membrane.

Abdomen brownish black, without differentiated basal rings; genital shield orange. Ovipositor with long, very slender cerci.

Habitat. INDIA (Kerala). *Holotype:* ♀, Periyakanal, 5,000–5,500 feet, December 17, 1958 (Fernand Schmid).

From other generally similar medium-sized regional species of the subgenus the present fly is readily told by the body coloration, and by the pattern, venation and trichiation of the wings. Such species include *Hexatoma* (*Eriocera*) *anamalaiana* Alexander, *H. (E.) tacita* Alexander, and *H. (E.) politovertex* Alexander.

***Hexatoma* (*Eriocera*) *phaeton* new species**

Size medium (wing of male 9.5 mm); general coloration of thorax polished black; legs black, femoral bases narrowly yellowed; wings strongly darkened, unpatterned; Sc_1 ending opposite fork of Rs , R_{2+3} about twice R_2 , cell *1st* M_2 long-rectangular, cell *2nd* A narrow; abdomen black, the basal segments obscure yellow.

♂. Length about 9 mm; wing 9.5 mm; antenna about 1.7 mm.

Rostrum very short, brownish black; palpi black. Antennae of male 7-segmented, black throughout; first flagellar segment nearly as long as the succeeding two combined, stouter, with relatively sparse coarse setae; antepenultimate segment subequal to the terminal one, both shorter than the penultimate. Head black, more or less pruinose above.

Pronotum brownish black. Mesonotum shiny black; praescutal setae small and very sparse. Pleura black, posterior sclerites and pleurotergite a trifle paler. Halteres light brown, apex of knob darker brown. Legs with coxae black; trochanters brownish yellow beneath, darker above; remainder of legs black, femoral bases narrowly yellowed. Wings strongly darkened, unpatterned, with no trace of stigmal darkening; a whitish streak in basal half of cell *1st* A adjoining the vein; veins brown, Sc and R more yellowed. Strong macrotrichia on most veins beyond cord, sparse on M_3 , lacking on M_4 , Cu_1 and both Anals; on Sc well distributed over the entire length; R with numerous microscopic setigerous punctures before the arculus, very small but more abundant near extreme base.

Venation: Sc moderately long, Sc_1 ending opposite fork of Rs ; R_{2+3+4} and R_{1+2} subequal or the latter slightly longer, shorter than R_{2+3} , the latter about twice R_2 ; cell *1st* M_2 long-rectangular, slightly shorter than the distal section of M_{1+2} ; *m-cu* about one-third its length beyond the fork of M , longer than the distal section of Cu_1 , which is not bent markedly basad; cell *2nd* A narrow.

Abdomen black, sides of basal tergite and proximal third of the second obscure yellow, posterior borders of segments very narrowly pale; no differentiated basal rings; outer segments with conspicuous setae, long and yellow on the sternites, black and much shorter on the tergites.

Habitat. INDIA (Madras). *Holotype:* ♂, Kumili, 2,000–2,500 feet, November 28, 1958 (Fernand Schmid).

The most similar regional members of the subgenus include *Hexatoma (Eriocera) serena* new species and *H. (E.) rama* Alexander, all readily told among themselves by the body and wing coloration and by the venation and trichiation of the wings.

Hexatoma (Eriocera) furtiva new species

Size medium (wing of male about 12 mm); head and thorax black, pruinose; praescutum dark gray with four opaque black stripes that are narrowly bordered by more intense black; legs black; wings strongly tinged with brown, the prearcular and costal fields strongly so; outer radial veins with abundant macrotrichia; R_{1+2} long, cell M_1 present; abdomen black, segments two to four orange yellow.

♂. Length about 15 mm; wing 12.3 mm; antenna about 3 mm.

Rostrum and palpi black. Antennae of male 8-segmented, black; first flagellar segment shorter than the succeeding two combined; all flagellar segments with long setae, stouter on the more proximal segments. Head black, gray pruinose, with long coarse proclinate bristles; vertical tubercle porrect.

Pronotum black, sparsely pruinose. Mesonotal praescutum dark gray, with four opaque black stripes that are narrowly bordered by more intense black, including a central vitta; posterior sclerites black, subopaque; praescutum with abundant short black setae. Pleura dull black, pruinose. Halteres short, black. Legs with coxae and trochanters black, the former opaque, fore pair with abundant long setae; remainder of legs black; segments without scales. Wings strongly tinged with brown, the prearcular and costal fields strongly so, stigma not further differentiated; veins brown, outer veins behind the radial field paler and more delicate. Outer radial veins with abundant trichia, sparse or lacking on R_{2+3+4} and R_{2+3} present on both sections of R_5 ; scattered trichia on M_1 , very sparse on M_2 and M_3 . Venation: Sc long, Sc_1 ending opposite R_2 , Sc_1 long, exceeding R_{2+3} ; R_{1+2} very long, about four times R_2 ; cell M_1 present, subequal in length to its petiole; $m-cu$ at near midlength of M_{3+4} ; vein *2nd A* long and sinuous.

First abdominal segment dull black, segments two to four, inclusive, orange yellow, unpatterned except for vague lateral darkenings on segments three and four; basal rings not differentiated; segments five to nine, including hypopygium, intensely black, subnitidous.

Habitat. INDIA (Kumaon). *Holotype:* ♂, Rishikesh, Dehra Dun, 1,200 feet, March 25, 1958 (Fernand Schmid).

The most similar regional species is *Hexatoma (Eriocera) semilimpida* (Brunetti) which differs conspicuously in the pattern of the body and wings.

Hexatoma (Eriocera) apoensis new species

Belongs to the *rubrescens* group; mesonotum obscure orange, with two small brown lateral spots, pleura more yellowed with two further darkened areas; legs obscure yellow; wings brownish yellow, unpatterned except for the very small brown stigma; basal section of R_5 very reduced, cell M_1 present, subequal in length to its petiole, cell *1st M*₂ rectangular, with $m-cu$ at near midlength; basal abdominal segments orange, the outer ones orange, hypopygium brownish yellow.

♂. Length about 8 mm; wing 11 mm; antenna about 1.8 mm.

Rostrum and palpi black. Antennae of male 8-segmented; scape and pedicel brownish yellow, flagellum light brown; first flagellar segment stout basally, narrowed on outer half, a little shorter than the succeeding two combined; segments two and three subequal, the former with very long verticils, the longest only a little shorter than the segments; outer three segments gradually decreasing in length. Head light gray, center of disk extensively infuscated; vertical tubercle low.

Pronotum orange, pretergites yellow. Mesonotal praescutum chiefly obscure orange, produced by four confluent stripes, humeral and lateral regions paler; a distinct brown spot on side of praescutum behind the pseudosutural foveae; posterior interspaces vaguely darkened; scutum obscure orange, with a darkened median area just behind the suture and a pair at ends of the latter; scutellum and postnotum paler brownish yellow; vestiture of notum exceedingly reduced. Pleura obscure yellow, with small darkened areas on anepisternum and before the wing root. Halteres infuscated. Legs with coxae and trochanters testaceous yellow; remainder of legs obscure yellow, outer tarsal segments weakly more darkened; legs with abundant linear scales, paler in color than the larger setae. Wings brownish yellow, unpatterned except for the very small darker brown stigma; veins brown. Veins delicate, with macrotrichia beyond cord and on outer two-thirds of R_s . Venation: R_s long, in longitudinal alignment with R_5 , basal section of the latter very reduced; R_{2+3+4} a trifle longer than R_{1+2} or R_2 ; cell M_1 present, subequal in length to its petiole; cell 1st M_2 rectangular, with $m-cu$ at near midlength; cell 2nd A relatively narrow.

Abdomen with basal three or four segments orange, outer segments brown, darker before the brownish hypopygium.

Habitat. PHILIPPINES (Mindanao). *Holotype:* ♂, Mount Apo, 6,000 feet, September 10, 1930 (C. F. Clagg).

Hexatoma (Eriocera) apoensis is most nearly related to *H. (E.) angustipennis* (Enderlein), of Sumatra, and *H. (E.) rubrescens* (Walker), of Borneo, differing in the coloration,

especially of the thorax. The elongate scales on the legs are found in all members of the *rubrescens* group that are known to me.

Hexatoma (Eriocera) rossiana new species

Size small (length, wing and antennae all about 8 mm); general coloration black, outer two abdominal segments orange; antennae of male 5-segmented, flagellar segments progressively shorter outwardly, provided with an abundant pale pubescence but without bristles; knobs of halteres whitened; wings strongly infuscated, veins beyond cord with abundant trichia; cell M_1 present, very deep; *m-cu* at near four-fifths the length of cell 1st M_2 .

♂. Length about 8 mm; wing 8 mm; antennae about 8.2 mm.

Rostrum relatively small, light brown; palpi brownish black. Antennae of male elongate, subequal to body or wing; scape ferruginous, remainder dark brown to brownish black; 5-segmented, there being only three very long flagellar segments that decrease gradually in length and diameter from the basal one outwardly; segments with a very abundant erect pale pubescence but without emergence bristles, as are common in most species of the genus having elongate antennae in the male sex. Head dull black, slightly patterned with paler on the inconspicuous slightly bifid vertical tubercle; sides of vertex and genae adjoining the eyes slightly pruinose.

Pronotal scutum dark brown, obscure yellow medially, scutellum similarly brightened. Mesonotal praescutum with the ground dull black, with four poorly indicated plumbeous stripes, the intermediate pair narrowly separated by a distance nearly equal to their own width; remainder of notum dull black, posterior border of mediotergite more pruinose; mesonotum unusually glabrous, the vestiture reduced to sparse erect scattered setae on the scutellum and praescutal interspaces. Pleura dull plumbeous black; membrane darkened. Halteres with stem dusky, base restrictedly obscure yellow, knob whitened. Legs black throughout, vestiture short and appressed. Wings very

strongly infuscated, somewhat more so on anterior half, stigma not differentiated; a whitened streak behind basal third of vein *1st A*; veins brown. Veins beyond cord with numerous macrotrichia, on *M* continued basad to about opposite origin of *Rs*. Venation: *Sc* long, *Sc*₁ ending beyond fork of *R*₂₊₃₊₄, *Sc*₂ far retracted; *Rs* long, slightly exceeding *R*₄; *R*₂₊₃ a little shorter than *R*₁₊₂; cell *M*₁ present, about three times its petiole; cell *1st M*₂ elongate, with *m-cu* at near four-fifths its length.

Abdomen black, eighth and ninth segments orange; hypopygium very small and inconspicuous, provided with long pale setae.

Habitat. PHILIPPINES (Mindoro). *Holotype:* San Jose, April 5, 1945 (E. S. Ross); California Academy of Sciences.

This very distinct fly is named for its collector, Dr. Edward S. Ross, authority on the Embioptera and other groups of insects. In the very long *Rs*, which is about twice as long as *R*, the fly differs from all other described regional species. The reduction in number of antennal segments to five likewise is noteworthy. By Edwards's key to the Old World species of *Eriocera* (1921) the fly runs to couplet 35, disagreeing with all species beyond this point.

Mosquitoes: Key to United States Genera Based on Male Genitalia (Diptera, Culicidae)

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With the sustained interest in identification of Diptera via characteristics of the male genitalia (Fig. 1), simple keys to the various groups have become essential to efficient entomological instruction. The following key, devised for CDC training courses, has proven valuable in introducing this taxonomic method.

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